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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,416	07/07/2003	David Scott Wishart	080586-000100US	7969
20350 7590 10/04/2007 TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			EXAMINER WHALEY, PABLO S	
			ART UNIT 1631	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/615,416

Applicant(s)

WISHART ET AL.

Examiner

Pablo Whaley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 51-64 is/are pending in the application.
- 4a) Of the above claim(s) 63-64 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 51-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

Applicants' remarks, filed 07/02/2007, have been fully considered. The following rejections and/or objections are maintained, newly applied, or withdrawn for the reasons set forth below. They constitute the complete set presently being applied to the instant application.

#### *STATUS OF THE CLAIMS*

Claims 51-62 are herein under examination. Claims 1-50 and 65-77 have been cancelled. This application contains claims 63-64 drawn to an invention nonelected with traverse in the response filed 12/14/2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

#### *PRIORITY*

Priority to foreign application CANADA 2,331,116, filed 01/15/2001, has been acknowledged.

#### *SPECIFICATION*

The specification, which has been amended to benefit claims under 35 U.S.C. 120, 121 or 365(c), is acceptable.

**CLAIM REJECTIONS - 35 USC § 101**

The rejection of claims 51-62 under 35 U.S.C. 101 is hereby withdrawn in view of applicant's amendment of the claims.

**CLAIM REJECTIONS - 35 USC § 112, 2<sup>nd</sup> Paragraph**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 53 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 53 now recites "using said...parameters to control said notch filter to cause said notch filter to filter" which is ambiguous language. It is unclear whether "using said...parameters to control said notch filter to cause said notch filter to filter." It is unclear whether the function of said parameters is "to control", "to cause", or both. Clarification is requested via clearer claim language. Furthermore, the above limitation recites passive language (i.e. to control, to cause). Applicant is encouraged to amend the claims using active language (i.e. controlling, causing).

**CLAIM REJECTIONS - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C.102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 51 and 55-62 remain rejected under 35 U.S.C. 102 (b) as being anticipated by CCL.NET (<http://www.ccl.net/cca/software/MS-WIN95-NT/MestRe-C/README.shtml>, Published and last modified on Mar. 15, 1997, p.1-7).

Applicant's arguments that CCL.NET does not teach the order of performing the functions or succession of functions as recited in the instant claims are not persuasive for the following reasons. Claim 51 is directed to a method comprising steps of performing a FT, filtering a region, phasing said filtered spectrum, and storing said measured spectrum. It is noted that the transitional phrase "comprising" is open-language and does not exclude additional, unrecited elements or method steps [MPEP 2111.02]. As there is no limitation recited in the instant claims that limits the order of the claimed method steps, applicant's arguments are directed to features that are not recited in the rejected claim(s). It is noted that applicant has not pointed out any other disagreements with the Examiner's contentions or explained how the claims avoid the teachings of the above reference. Regarding amendments to claim 51, CCL.NET also provides a peak-picking options [p.6] that locates peaks in the spectrum and stores the peak data to a file. Therefore, the Examiner maintains that CCL.NET teaches all aspects of claims 51 and 55-62.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 51-54, 58, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung et al. (Circulation, 1998, Vol. 97, p.2536-2542), in view of Boesiger (Physica Scripta., 1988, Vol. T23, p.312-316), Moore et al. (Physical Review B, 1988, Vol. 38, No. 16, p.11163-11167), and Oppenheim et al. (Digital Signal Processing, 1975, Prentice-Hall, p.230, 242, and 255-265).

**This rejection is necessitated by amendment.** Claims 51, 52, and 53 have been amended to recite new limitations not previously recited.

Jung et al. teach the use of a computer program for producing NMR spectral data from patients during in vivo imaging [Fig. 1, 2, and 3], wherein data is Fourier-transformed, phase-corrected, and a Gaussian multiplication filter is applied to data, as in claims 51 and 53. A spectrum with at least one peak associated with a contaminant is disclosed [Fig. 1, below, and Fig. 2], as in claim 52, wherein said spectrum is broadly interpreted as a trace file, as the definition provided in the specification is non-limiting [p.8]. The processing is carried out on a

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computer program [p.2541, Appendix], and quantification is carried out after subtraction of the fitted time-domain signals from the measured signal, leading to filtered spectra that exhibit a flat baselines and are free of contaminated blood signals [p.2541, Appendix, ¶2] and [Fig. 2], as in claims 51 and 52. The evaluating of signals from a chosen volume is done using a fitting routine (Variable Projection) used with Gaussian model functions [p.2537, Data Analysis]. Jung et al. displays peak fitting results wherein a specific window is minimized [Fig. 2, middle] via said data processing and filtering, wherein "fitting" is a teaching for "iterative" adjustment of parameters; peak integration routines for determining areas under peak curves, wherein specific regions are used for definition of the baseline [p.2541, Appendix], and spectral averaging [Fig. 3]. Thus claim 54 is also anticipated.

Jung et al. do not specifically recite the use of free induction decay (FID) signals, as in claim 51. However, it is well known in the art that NMR imaging is based on the acquisition of FID signals, as taught by Boesiger [Fig. 3]. Jung et al. also does not teach the use of notch filters or spectral windows, as in claims 52, 53, 58, and 59. However, Jung et al. clearly teach the use of multiplicative filters and subtraction for correction of data, which suggests the use of band-pass filters (i.e. notch filters).

Moore et al. disclose a method for the acquisition of FID signal produced by NMR for evaluating the spectral properties of potassium over different temperature ranges [Abstract] and [Section IV]. Signal collection and processing includes: recording of an FID signal on a signal averager, taking the Fourier transform of the FID, transferring to a computer for digital processing, and phase correction [Fig. 1, 2a] and [p.165, Section C], as in claim 51. Moore et al. also teach spectral enhancement of specific windows by removing the low and high signal components using a decaying sinusoidal function [Fig. 2b], therefore it would be well within the

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capabilities of one of ordinary skill in the art to use band-pass filters (i.e. notch filters) for signal processing of spectral data, as in claims 52-54, 58, and 59.

Oppenheim et al. teach signal processing techniques that include iterative mathematical procedures and parameters for designing band-pass filters (i.e. notch filters) [p.230, Table 5.1] and [Fig. 5.43, 5.45, and 5.46], as in claims 52, 53, and 54. Oppenheim et al. also teach methods for defining spectral windows [p.242], as in claims 58 and 59.

Thus it would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice the spectral processing techniques of Jung et al. using FID signals acquired from NMR as taught by Moore et al., and specifically definable band-pass filters, as taught by Oppenheim et al. above, where the motivation would have been to improve patient diagnosis with NMR by removing artifacts and signal noise in patient spectral data through selective filtering of measured FID data, as set forth by Moore et al. and Oppenheim et al., resulting in the practice of the instant claimed invention with predictable results.

Claims 51, 55-59, and 61 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Cameron (Mikrochim. Acta, 1987, Vol. III, p.229-239), in view of Otvos (US 5,343,389; Issued Aug. 30, 1994).

Applicant's argue that the teachings of Cameron are not applicable to the instant claims, as Cameron relates to the utility of infrared data and not NMR data, as recited in the instant claims. However, contrary to applicant's assertion, there is no limitation recited in the instant claims that limits the data to NMR data. While claim 51 has been amended to recite a process "for use in Nuclear Magnetic Resonance spectrum analysis," this is not a positive limitation of the data to NMR data, but an intended use of the instantly claimed method. Therefore



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applicant's arguments are not persuasive as they are directed to features that are not recited in the rejected claims.

Applicant's also argue that Cameron lacks any disclosure for performing any of the indicated operations on FID data associated with NMR spectroscopy in a succession as recited in the instant claims. Applicant's arguments are not persuasive for the following reasons. As previously set forth in the office action mailed 3/22/2007, the Examiner pointed out in detail the teachings of Cameron that anticipate claims 51, 52, 53, such as performing the Fourier transformation to obtain an initial spectrum, methods for filtering and phase correction [p.230, Table 1 and p.232, ¶ 3], algorithms for measuring of spectral data [p.231, ¶ 4]. Cameron also teaches parameters associated with spectral data and algorithms [p.231, ¶ 4], as in claims 53 and 54. Methods for integration of spectral intensity data [Table 1], and filtering methods for optimizing spectral data that has been windowed [p.232, ¶ 3], which equates to a teaching for area calculation and "iteratively adjusting" parameters which is as in claim 54. Phase correction of spectral data comprising real and imaginary components [Table 1] and [p.238, ¶ 2], as in claim 55. Sinc functions for line broadening, broadening functions for removal of negative peaks [p.230, ¶ 2 and 3], and weighted Fourier Transforms [p.232, ¶ 3 and p.233, ¶ 2], as in claims 56 and 57. Taking a "section" the spectrum (i.e. windowing) and weighting it (i.e. scaling) [p.232, ¶ 3], and user interfaces for selecting specific spectral data regions [p.239, ¶ 2], as in claims 58, 59. Peak height computation and baseline subtraction [p.232, ¶ 2], which equate to teachings for baseline "correction", as in claim 61. Additionally, Cameron teaches creating data files of a plurality of data types, including NMR, for transferring and processing data using a spectral processing system that contains software [p.237, ¶3] and archiving of data [p.237, ¶4], which equates to newly added limitations of storing spectral data.

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As set forth above, as there is no limitation recited in the instant claims that limits the order of the claimed method steps, applicant's arguments are directed to features that are not recited in the rejected claim(s). Furthermore, it is well established that selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results [See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930)].

The Examiner also acknowledged that Cameron does not specifically teach performing the FT on FID data, as in claim 51. However, Cameron does teach Fourier processing techniques and filtering [p.232, ¶3] and common applications of such filters in NMR spectroscopy [p.233, ¶1]. As FID data is well-known to be observable in NMR spectroscopy (See "free induction decay", [www.answers.com](http://www.answers.com)), and are processed in identical fashion to frequency domain spectral data [Otvos], the Examiner maintains that it would have been well within the capabilities of one of ordinary skill in the practice the above operations taught by Cameron on FID data sets. For the above reasons, the rejection of claims 51, 55-59, and 61 is maintained.

Claims 51-62 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Dunkel (US 5,572,125; Issued Nov. 5, 1996), in view of Oppenheim et al. (Digital Signal Processing, 1975, Prentice-Hall, p.230, 242, and 255-265).

Applicant's arguments appear to assert that the claimed invention possesses an unexpected advantage of a filter used in combination with the actions recited in the instant claims, and therefore it would not be obvious to combine the filter as suggested by Oppenheim

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to the process described by Dunkel. Applicant's arguments are not persuasive for the following reasons.

It is well settled that unexpected results must be established by factual evidence. Applicant's have not presented any experimental data showing that use of the filter in combination with the claimed process results in an unexpected advantage. Due to the absence of such tests comparing applicant's invention with those of the closest prior art, applicant's assertion of unexpected results constitute mere argument. See also *In re Linder*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972; Ex parte George, 21 USPQ2d 1058 (Bd. Pat. Appl. & Inter. 1991). Applicant's arguments have not pointed out any other disagreements with the Examiner's contentions, other than those set forth above, or explained how the claims avoid the teachings of the above references. For these reasons, the rejection of claims 51-62 is maintained.

### CONCLUSION

No claims are allowed.

Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Whaley whose telephone number is (571)272-4425. The examiner can normally be reached on 9:30am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached at 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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